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Massachusetts
01754

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SUPERFUND RECORDS CTR	
Site	Wells G & H
Break	6.1.4
Other	587789

Via Federal Express

October 28, 1993

Mary Garren
US EPA - Region I
Waste Management Division
JFK-Federal-Building-(HRS-CAN2)
Boston, MA 02203-2211

RE: RD/RA of the Unconsolidated Deposits at UniFirst Corporation
Wells G&H Site, Woburn, Massachusetts
EPC Reference No.: 01.03/JTL.0628

Dear Mary,

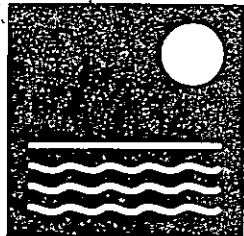
This letter responds to Paula Fitzsimmons' letter of July 12, 1993 requesting additional field work to lessen the level of uncertainty that the EPA has regarding the practicability of soil-vapor extraction (SVE) to remediate the unconsolidated deposits on the UniFirst property. In addition, I want to apprise you of our continuing work and continued commitment to expedite the schedule for the RD/RA.

We continue to believe, as discussed in our meetings with the EPA on May 7 and June 30, 1993, that our conceptual model best fits the data for the unconsolidated deposits and shallow ground water on the UniFirst property. As you recall, this conceptual model indicates that PCE contamination present in the unsaturated unconsolidated deposits is at most a minor contributor to contamination of the ground water beneath the UniFirst property compared to the DNAPL contamination present in the underlying bedrock. In addition, we continue to have significant reservations regarding the ability of SVE to achieve the soil clean-up levels specified in the Record of Decision due to the spatial variability in the physical properties of and chemical concentrations in the unconsolidated deposits on this property. Nevertheless, in the spirit of continued cooperation, UniFirst is prepared to



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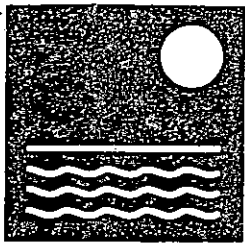
undertake appropriate studies which will address and expand upon the requirements outlined in Paula's letter.

Since our last meeting with EPA, in June 1993, UniFirst has been involved in continued efforts to generate additional characterization data that would help elucidate the conceptual model for the property that has been evolving following the discovery of the area of waste-oil and PCE contamination in the northeast corner of the property. This work has included: additional, state-of-the-art, analytical work on the unconsolidated deposits in the northeast corner of the site; sampling and chemical analysis of ground water from the on-property wells; water-level measurements; and excavation and sampling of bituminous concrete pavements within and outside of the loading dock. Not all of the data from these analyses have been finalized or are available in formal data packages from the laboratories. UniFirst, however, will submit to the EPA these complete data packages along with additional interim "work in progress" reports. The additional work proposed in the following sections of this letter will enable us to further augment the conceptual model based on the data collected from the previous investigations.

UniFirst is committed to performing the tasks described below according to the following general schedule: implementing the greater part of the field and analytical work described below from November 1993 through January 1994; submitting an interim report to the EPA in January 1994 which contains the formal data reports for the petroleum identification analyses performed earlier on samples of unconsolidated deposits and pavement; submitting an interim report to the EPA in March 1994 which contains the data from the late Fall and Winter field and laboratory work; meeting with the EPA in late March or April to discuss findings to date and further work; completing the field and analytical program in late Spring and early Summer 1994; and submitting a final report and recommendations in August 1994. Additional scheduling information is provided in Attachment A.

Paula's letter of July 12, 1993 identified three specific activities:

1. Source area characterization to determine the lateral and vertical extent and concentration of contamination in the overburden (including the area beneath the building);



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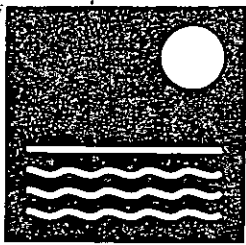
2. Dynamic tests such as field-scale in-situ permeability tests and the use of multi-level probes to identify the nature of vapor migration; and
3. Based on the information obtained from the preceding investigations, a feasibility study, namely a pilot test, that examines the time versus effectiveness for remediation for the unconsolidated deposits using SVE.

As described in Paula's letter, it is appropriate and desirable to perform the source-area characterization and in-situ permeability testing prior to the design of a pilot test because those tasks will determine if a pilot test is practicable and, if so, the best configuration for the test. The following sections describe the work that will be performed for the source-area characterization and in-situ permeability testing.

Source Area Characterization

The purpose of this additional source-area characterization is to define further the spatial location and chemical character of areas within the unconsolidated deposits that contribute to contamination of the ground water. Past investigations, however, have shown extreme spatial and chemical variability in the unconsolidated deposits. Additional studies are expected to demonstrate further this variability. Therefore, a reasonable technical rationale for spatial location of further borings, excavations or monitoring wells should be employed to maximize the effectiveness of the techniques used and the usefulness of the data in helping to understand better the nature of potential source zones and the conceptual model for such contamination.

In performing source-area characterization for soils, it is important to develop conceptual models for the release and migration of contaminants. Appropriate conceptual models allow the determination of how chemical concentrations may be interpolated between points of measurement or extrapolated beyond points of measurement. With regard to the UniFirst property, it is important as part of the conceptual model to assess whether there have been differing release conditions that may have contributed to the contaminant distribution observed. As discussed in the Draft Pre-Design



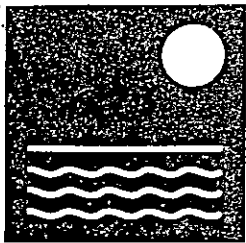
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Work Plan for the property (ENSR, 1992), based on interpretation of historical aerial photographs, the area of waste-oil contamination outside the UniFirst building pre-dates occupation of the property by UniFirst. Discovery of PCE contamination in this area may indicate a significant potential source of the PCE contamination on the property.

The source characterization work will include:

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- a) ~~Review of existing ground-water-monitoring data from wells in the unconsolidated deposits and shallow bedrock.~~
 - b) Installation of additional soil borings and ground-water-monitoring wells in the unconsolidated deposits.
 - c) Test pits outside the building in the area of waste-oil contamination and beneath the building in the north end of the current loading dock.
 - d) Installation of soil borings and vapor-monitoring probes beneath the building, if indicated by previous studies.
 - e) Chemical characterization of hydrocarbon contamination associated with PCE contamination.
 - f) Selective analysis of samples of unconsolidated deposits from the various test pits, borings and wells for: volatile organic compounds (methanol preserved); semi-volatile organic compounds; and PCB/Pesticides.
 - g) Selective analysis of ground-water samples from the new wells and limited existing wells for: volatile organic compounds; semi-volatile organic compounds; PCB/Pesticides, chloride and nitrate.

The existing ground-water-monitoring data will be examined with regard to the spatial distribution of contaminants in the shallow ground water and the chemical characteristics of the ground water. In particular, efforts will be made to determine if the contribution of unsaturated-zone contamination in the unconsolidated deposits to ground-water contamination can be

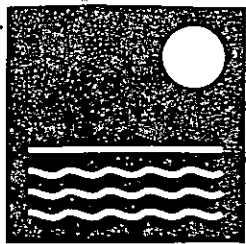


distinguished from the contributions to ground-water contamination from DNAPL in the bedrock.

This interpretation of patterns of shallow ground-water contamination will be augmented by the installation of additional monitoring wells. Approximately nine (9) additional ground-water-monitoring wells in four (4) nests will be installed in the unconsolidated deposits in the southwest and south-central portions of the UniFirst property (see Figure 1). The exact locations of these installations will be determined following review of the existing ground-water-monitoring information and based on accessibility, location of utilities, clearance, and discretion of the supervising geologist. At each new well-installation location, one well will be installed to intersect the water table and one or more wells will be installed within the deeper unconsolidated deposits where practical.

One purpose of these monitoring-well installations is to help locate areas of soil contamination that may act as sources of ground-water contamination. By identifying the plume of shallow ground-water contamination which would be expected to result from such shallow unconsolidated-deposits sources, one can then focus additional soil investigations or remedial measures upgradient of the ground-water plume in areas that are most likely to be useful. The scale required to map contaminant distributions in soils, together with the extreme spatial and chemical distribution variability in unconsolidated deposits, require that monitoring points be carefully targeted. It is hoped that the distribution of the shallow ground-water contamination at the UniFirst property will help narrow down potential zones to investigate for soil contamination, particularly beneath the eastern portions of the building, and will allow placement of soil borings and vapor probes at strategically chosen sites beneath the building.

Figure 2 is a diagram of the east end of the UniFirst property where previous investigations for possible shallow source zones have been focused. Several investigations have been undertaken in this area of the property in an effort to locate and delineate potential significant sources of ground-water contamination. In Figure 2, the areas of the property that have been previously investigated by excavation, soil borings, and soil-vapor surveys are indicated. Also indicated are the locations of the influent-line trench excavation from UC22, in which waste-oil contamination was discovered and



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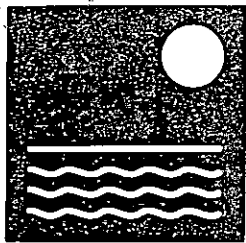
excavated, as well as the outline of a stained soil-zone interpreted from a 1964 aerial photograph.

As seen in Figure 2, much of the area beneath the surficial stained-soil zone delimited from the 1964 aerial photo has been investigated by excavation of trenches and test pits. To further investigate this area, test pits will be excavated outside the building in the northeast portion of the property (see Figure 2). Another test pit will be excavated within the northern loading-dock-beneath-the-building. One purpose of these test pits is to examine directly if there are obvious subsurface pathways through the unconsolidated deposits for the migration of DNAPL from the area of the waste-oil contamination toward the area of the DNAPL found in well UC8. The test pits will also allow examination and collection of soil samples to characterize the physical and chemical variability in the unconsolidated deposits and the fractured top of bedrock.

To the east of the pavement edge at the northeast corner of the property, where the unconsolidated deposits are thicker, several borings will be completed. In addition, if the results of the shallow-ground-water monitoring and test pits indicate, borings and vapor-monitoring probes will be installed in the unconsolidated deposits at several locations beneath the building.

In addition to the proposed investigations described above, a program is currently underway to attempt to characterize the hydrocarbons associated with the area of waste-oil contamination and other areas on the property. GC-FID (gas chromatography-flame ionization detector) analyses are being performed to characterize the hydrocarbon peak patterns. Further analyses are being performed using GC/MS (gas chromatography/mass spectrometry) to determine the concentrations of specific PAH (polycyclic aromatic hydrocarbon) compounds. A more detailed description how these analytical techniques might be used to characterize different hydrocarbon mixtures will be provided with the analytical results for this work in the January 1994 interim report.

Tentative results from the analysis of soil samples collected from the area of waste-oil contamination and the sample of DNAPL from UC8 have found a light hydrocarbon fraction and a heavy hydrocarbon fraction in several of the



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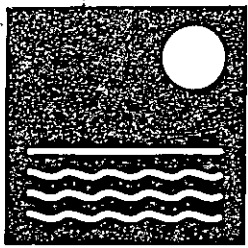
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soil samples and the DNAPL. Further analyses of these and other samples are underway to attempt to identify potential relationships among different areas of soil contamination and the DNAPL.

In-Situ Permeability Testing

A dynamic air extraction test is planned following the completion and review of the excavation, boring and well-installation program. This test will be performed to determine the in-situ air permeability of the unconsolidated deposits beneath the property. The test will be located based on the results of the source-area characterization so as to be representative of the type of setting in which SVE might be focused. The test will consist of air extraction from a well screened in the lower portion of the unconsolidated deposits and pumped for periods of 6 to 24 hours. Nests of vapor probes will be installed at various depths and distances from the extraction well for the purpose of monitoring vacuum levels during the test. The level of vacuum measured will be related to the bulk in-situ air permeability using conventional well-testing procedures. The monitoring of vacuum levels at various depths and distances from the extraction well will allow some assessment of the spatial variability in air permeability. Vapor collected from the extraction well will be treated appropriately for removal of volatile organics, if required. Vapor samples will be collected from the extraction wells and vapor probes at the start and finish of each permeability test. Soil samples collected during installation of the extraction well and vapor probes will be analyzed to assess the physical variability in the area of the test.

As stated above, UniFirst plans to continue its investigation of the unconsolidated deposits, and expects to mobilize to perform the test pits, borings and shallow-well tasks in November and December, 1993. I will apprise you of the exact dates as soon as I get commitments from the critical contractors. Also, as I suggested in our October 27, 1993 telephone conversation, UniFirst wants to meet with the EPA as soon as practical to discuss the findings to date and describe further the scope of work set forth above. I will call your shortly to discuss these arrangements. Finally I have



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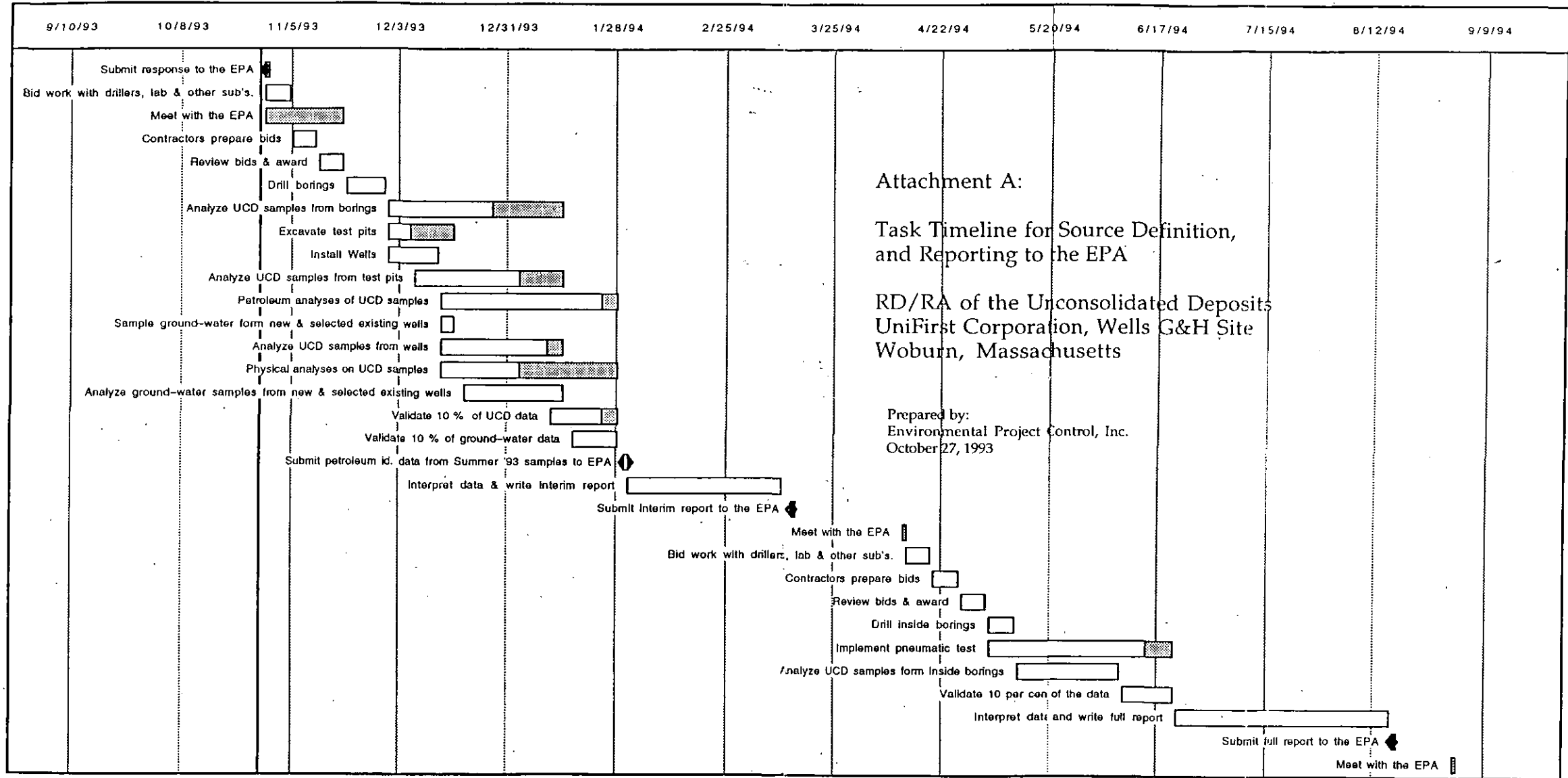
enclosed three copies of this letter to facilitate distribution at the EPA. Please call me should you require additional copies.

Sincerely,

A handwritten signature in black ink, appearing to read "Jeffrey T. Lawson".

Jeffrey T. Lawson, P.G.
Project Coordinator

cc: Jay Naparstek (DEP)
Deirdre Menoyo (Goodwin, Procter & Hoar)

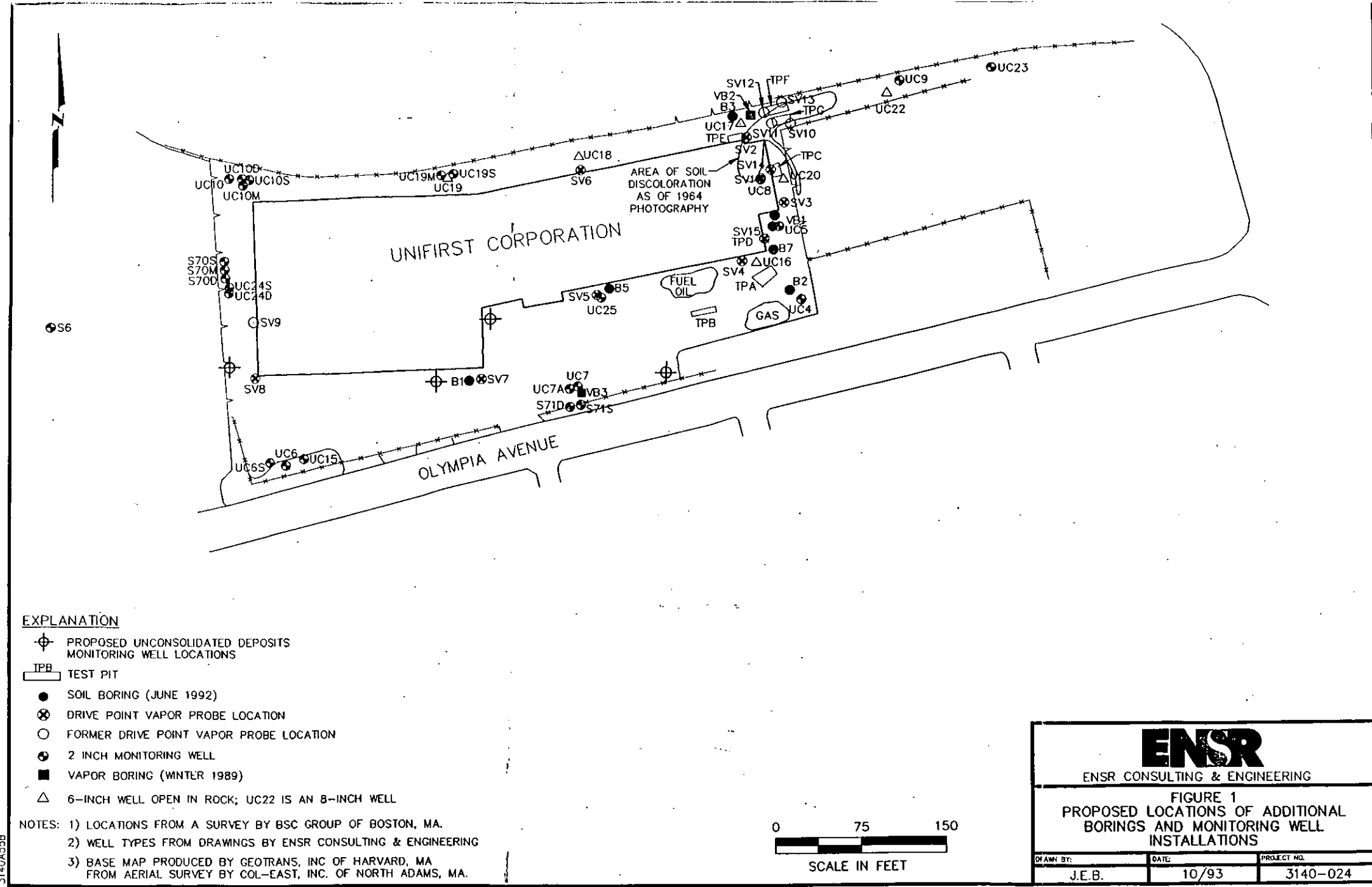


Attachment A:

Task Timeline for Source Definition,
and Reporting to the EPA

RD/RA of the Unconsolidated Deposits
UniFirst Corporation, Wells G&H Site
Woburn, Massachusetts

Prepared by:
Environmental Project Control, Inc.
October 27, 1993



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